Space Weather Forecast

Issued on Thursday, 20 June 2024 at 13:19 Local

This forecast provides a four day assessment of space weather events. The probabilities stated below are for reaching or exceeding the given levels. For more information about space weather impacts please see the Met Office Space Weather Scales https://www.metoffice.gov.uk/weather/learn-about/space-weather/uk-scales

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Space Weather Forecast Headline: Moderate-class flares likely (R1-R2 radio blackouts), slight chance of Strong flares (R3 blackouts). Chance of S1/Minor radiation storms.

Analysis of Space Weather Activity over past 24 hours

Solar Activity: Solar activity has fallen to Low. There are eight sunspot regions on the disc. There are three large and complex regions in the western hemisphere. Two moderately sized spots with moderate complexity reside in the eastern hemisphere. All other spots are small and simple.

No obviously Earth directed Coronal Mass Ejections (CMEs) have been seen in the last 24 hours.

Solar Wind / Geomagnetic Activity: Solar winds showed declining coronal hole fast wind influence. Wind speeds fell from elevated to slightly elevated. Interplanetary Magnetic Field was weak, the north-south component varied weakly. Geomagnetic activity has been Quiet to Unsettled (Kp 1-3).

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) has remained at background levels with no solar radiation storms occurring.

Four-Day Space Weather Forecast Summary

Solar Activity: Moderate activity is likely, with a slight chance of isolated Strong flares, most likely from either of the two regions in the southwest, but potentially also the region in the northwest.

Solar Wind / Geomagnetic Activity: No obviously Earth directed coronal mass ejections have been seen in satellite imagery, although given the number of recent coronal mass ejections there is some uncertainty. Wind speeds have been elevated due to a coronal hole fast wind, and are expected to continue to slowly decline over the next couple of days. A further enhancement from another large coronal hole in the northern disc is possible, although confidence is currently low in the timing and strength of this feature. Wind speeds potentially returning to slightly elevated, perhaps elevated, by the end of Day 2 or into Day 3 (21-22 Jun). Any geomagnetic response is expected to be limited at this time of year.

Mainly Quiet to Unsettled geomagnetic activity is expected. There is a chance of isolated Active intervals Day 2 into Day 3, should we see any further coronal hole fast wind enhancement.

Energetic Particles / Solar Radiation: The count rate of energetic particles (high energy protons) is forecast to be at background levels but with the potential to rise, should any notable flares occur. This gives a chance of reaching the S1/Minor solar radiation storm level.

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Met Office Space Weather Forecast

Geomagnetic Storms:

Geo-Magnetic Storm Probability (Exceedance)	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Minor or Moderate	G1 to G2	No	1	10	10	5
Strong	G3	No	1	1	1	1
Severe	G4	No	1	1	1	1
Extreme	G5	No	1	1	1	1

Radio Blackouts - X Ray Flares:

X Ray Flares Probability	Level	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	R1-R2 M Class	Yes	70	70	70	70
Very Active	R3 to R5 X	No	20	20	20	20

Solar Radiation Storms - (High Energy Protons):

Radiation Storms Probability (Exceedance)	Level (cm^{-2} sr^{-1} s^{-1})	Past 24 Hours (Yes/No)	Day 1 (00-24 UTC) (%)	Day 2 (00-24 UTC) (%)	Day 3 (00-24 UTC) (%)	Day 4 (00-24 UTC) (%)
Active	≥ S1	No	30	30	30	20
Very Active	≥ S3 *	No	5	5	5	1
* S3 ≥ 10 MeV ≥ 1000 pfu and / or ≥ 50 MeV ≥ 10 pfu. (pfu = $cm^{-2}sr^{-1}s^{-1}$)						

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